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L9: Entry 5 of 5

File: USPT

Jun 9, 1987

Sparks et. 6167382

US-PAT-NO: 4671417

DOCUMENT-IDENTIFIER: US 4671417 A

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order

TITLE: Pre-pack product display system with support fixture

DATE-ISSUED: June 9, 1987

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Brien; Paul	Seal Beach	CA		

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
O.B.I. Co.	Seal Beach	CA			02

APPL-NO: 06/ 811175 [PALM]

DATE FILED: December 20, 1985

INT-CL: [04] A47F 7/00

US-CL-ISSUED: 211/59.1; 248/220.3, 248/231.8

US-CL-CURRENT: 211/59.1; 248/222.11, 248/224.8, 248/231.81

FIELD-OF-SEARCH: 248/220.3, 248/220.2, 248/221.3, 248/231.8, 211/57.1, 211/59.1

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	3094892	June 1963	Topf	248/220.3
<input type="checkbox"/>	3198342	August 1965	Murray	248/220.3 X
<input type="checkbox"/>	3229944	January 1966	Everburg	248/220.3
<input type="checkbox"/>	3252678	May 1966	Meyers et al.	248/220.3
<input type="checkbox"/>	3273844	September 1966	Hodson et al.	248/216.1
<input type="checkbox"/>	3312442	April 1967	Moeller	248/216.1
<input type="checkbox"/>	3469710	September 1969	Yosbikian	248/222.2
<input type="checkbox"/>	3516634	June 1970	Salaua et al.	248/220.3

<input type="checkbox"/> <u>4441619</u>	April 1984	Gibitz	211/59.1 X
<input type="checkbox"/> <u>4485929</u>	December 1984	Betts	211/59.1 X

FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
103361	December 1962	NL	248/220.3

ART-UNIT: 355

PRIMARY-EXAMINER: Gibson, Jr.; Robert W.

ATTY-AGENT-FIRM: Poms, Smith, Lande & Rose

ABSTRACT:

A retail product display system which may be pre-packed with product before shipment has a support fixture and a support stand made up of at least one sheet of thin, planar material foldable along a plurality of lines and assemblable into a rigid, three-dimensional, free-standing, upright, folded-plane structure containing a plurality of horizontal, rectangular apertures for mounting the support fixture therein. The support fixtures have one end cantilevered outwardly from the stand at a slight inclination to the horizontal for suspending the product therefrom, and a mounting end adapted to permit insertion into the mounting apertures from one side only of the display stand with means located thereat for gripping the support stand material through the mounting aperture and for coupling loads applied to the fixture from any direction to the support stand such that the fixture is resistant to withdrawal from the mounting aperture regardless of the attitude of the support stand. 7

13 Claims, 8 Drawing figures

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L12: Entry 1 of 1

File: USPT

Jun 9, 1987

DOCUMENT-IDENTIFIER: US 4671417 A

TITLE: Pre-pack product display system with support fixture

Abstract Text (1):

A retail product display system which may be pre-packed with product before shipment has a support fixture and a support stand made up of at least one sheet of thin, planar material foldable along a plurality of lines and assemblable into a rigid, three-dimensional, free-standing, upright, folded-plane structure containing a plurality of horizontal, rectangular apertures for mounting the support fixture therein. The support fixtures have one end cantilevered outwardly from the stand at a slight inclination to the horizontal for suspending the product therefrom, and a mounting end adapted to permit insertion into the mounting apertures from one side only of the display stand with means located thereat for gripping the support stand material through the mounting aperture and for coupling loads applied to the fixture from any direction to the support stand such that the fixture is resistant to withdrawal from the mounting aperture regardless of the attitude of the support stand. 7

Brief Summary Text (2):

This invention pertains, in general, to point-of-purchase display systems, and in particular, to a foldup display rack and product support fixture which can be pre-packed with the product before packaging for shipment to the point-of-purchase merchant for final assembly.

Brief Summary Text (4):

The retail sales industry has, in recent years, experienced a strong growth in point-of-purchase display systems, such as display racks, containers, etc.. This growth is due primarily to marketing studies which have shown that point-of-purchase display systems can result in increased sales ratios of nearly four-to-one over conventional retailers' shelf displays.

Brief Summary Text (5):

Typically, in point-of-purchase display systems, the manufacturer and/or distributor of a particular line of products will provide the retailer not only with an attractively packaged product, but also a functional stand or rack which is designed to hold or contain the product in an orderly fashion, and also to display the product in a pleasing, attention-getting manner. Also typically, these display systems are manufactured expressly for the particular manufacturer at his instance, contain artwork and product information printed colorfully thereon expressly directed to the particular product to be displayed, and are supplied in a disassembled, or partially-assembled configuration (along with assembly instructions) for inclusion in the manufacturer's shipping container to the point-of-purchase retailer.

Brief Summary Text (6):

In such a display system, a display stand or rack is constructed of a lightweight, inexpensive material, e.g., cardboard, which may be folded up into a rigid, folded-plane structure containing attractive artwork and/or consumer information related

to the product. In some configurations, open-top, round or rectangular bins may be formed into one side of the stand to retain and display the product conveniently and to provide ease of selection to the purchaser. In other configurations, the display stand is provided with a plurality of support fixtures projecting outwardly from the stand which are inserted into suitable apertures contained in the product or the product's package such that the product is suspended from the fixture in an orderly, tandem fashion.

Brief Summary Text (7):

Manufacturers have learned that retailers demonstrate a strong preference for so-called "pre-packed" displays, i.e., those in which the product has already been stocked or installed onto the rack in a partially-assembled configuration such that, upon receipt of the manufacturer's shipping container, the merchant or retailer has only to assemble the stand components to achieve a fully-stocked display system which is ready for presentation to the customer. This is because the "set-up ratio," i.e., the profit per individual product sold is very high when contrasted with the hand-stocking procedures employed with conventional display shelves or merchant-stocked display racks.

Brief Summary Text (8):

One of the problems with those point-of-purchase display systems presenting products suspended from outwardly-projecting support fixtures is that the hooks are designed to provide support only when the hooks are being loaded in a downward direction relative to an fully-assembled, upright display rack. Thus, when the manufacturer attempts to pre-pack a partially-assembled rack, e.g., when the partially-assembled rack is lying prone on a packing table for packaging before shipment, any force exerted upon the support fixture in a direction other than in the vertically-downward direction relative to an upright stand will result in the fixture becoming dislodged from the stand with resultant spilling of the product. A similar result can occur at the point-of-purchase end when the merchant attempts to remove the pre-packed system from its shipping container.

Brief Summary Text (9):

An example of the kinds of support fixtures which have been utilized heretofore is to be found in U.S. Pat. No. 3,273,844 to Hodson, et al. Hodson's display hook is adapted to fit in a horizontal wall slot and contains a three-dimensional triangular projection from a lower plate having a pointed, triangular end for piercing the wall to lock the hook thereto.

Brief Summary Text (11):

In U.S. Pat. No. 3,252,678 to Myers, et al., a display support is disclosed which may be utilized with a thin, panel-like material containing vertical, rectangular slots, but provides little resistance to lateral or upward forces acting upon the support.

Brief Summary Text (12):

U.S. Pat. No. 3,229,944 to Everberg discloses a relatively more-complicated display fixture for eyeglasses and the like adapted to be mounted to relatively thin display panels and requires a retaining clip installed from the back side of the panel.

Brief Summary Text (13):

None of these prior art devices teaches a one-piece product support fixture which is well adapted to be installed by access to only one side of a perforated panel, such as a free-standing cardboard display rack, and which, when installed, provides adequate resistance to forces likely to be encountered during pre-packing, packaging for shipment, shipment and assembly of the pre-packed display system.

Brief Summary Text (14):

Thus, it would be desirable to provide an inexpensive, reliable product display

system utilizing outwardly-projecting product support fixtures which can be pre-assembled to the display rack and pre-packed with the product before the display system is shipped to the merchant, without the product support fixture becoming dislodged during packing, transit or unpacking.

Brief Summary Text (16):

It is therefore an object of the present invention to provide a point-of-purchase product display system utilizing an outwardly-projecting product support fixture which may be pre-assembled to a foldup display stand and pre-packed with product for shipment to, and assembly by, the point-of-purchase merchant.

Brief Summary Text (17):

It is a further object of the present invention to provide a product support fixture which is adapted for pre-installation to the display stand and for pre-packing with the product prior to shipment and final assembly which is able to withstand the omni-directional forces imparted to the display fixture during packing, shipping and assembly of the display system without being pulled out of the display stand, regardless of the attitude of the partially-assembled stand.

Brief Summary Text (18):

It is yet a further object of the present invention to provide such a retail display system and a product support fixture that may be inexpensively fabricated but which is attractive to the consumer and achieves a high set-up ratio for the merchant.

Brief Summary Text (19):

These objects are preferably accomplished in a support fixture having one end cantilevered outwardly from the stand at a slight inclination to the horizontal when the stand is in an upright position for suspending the product therefrom, and a mounting end adapted to permit insertion from one side only of a display stand into a horizontal, rectangular mounting aperture contained in the stand, the mounting end having means located thereat for gripping the support stand material through the rectangular aperture and for coupling loads applied to the fixture from any direction to the support stand such that the fixture is resistant to withdrawal from the mounting aperture regardless of the attitude of the support stand, the support stand being made up of at least one sheet of thin, planar material foldable along a plurality of lines and assemblable into a rigid, three-dimensional, free-standing, upright, folded-plane structure capable of withstanding the combined weight of the product to be displayed, the stand containing at least one horizontal, rectangular aperture therein for mounting the support fixture.

Drawing Description Text (3):

FIG. 1 is an exploded view of the support fixture and mounting-aperture-containing display stand of the present invention;

Drawing Description Text (4):

FIG. 2 is a side view of the support fixture shown installed in the rectangular mounting aperture of the display stand;

Drawing Description Text (6):

FIG. 4 is a sectional view through the side of a display system of the present invention which has been pre-packed with the product for display and packaged for shipment to the retailer;

Drawing Description Text (7):

FIG. 5 is a front, sectional view through the pre-packed display system as revealed by the section V--V taken in FIG. 4;

Drawing Description Text (8):

FIG. 6 illustrates the assembled, pre-packed display stand and fixtures of the

present invention with the displayed product supported therefrom;

Detailed Description Text (2):

FIG. 1 illustrates an exploded view of an exemplary, preferred embodiment of the subject of the present invention, a product display system 10. Display system 10 includes a single-piece product display fixture 12 and a support stand 40 having a vertically-planar front face 41 containing at least one horizontal, rectangular mounting aperture 46 therethrough.

Detailed Description Text (4):

An L-shaped, substantially planar gripping finger 22 extends rearwardly from rear surface 20 of face plate 18 and has a rearward-extending, upper portion 24 having a cross-section slightly less than that of mounting aperture 46. Gripping finger 22 extends rearward for a distance slightly greater than the thickness of the material of support stand 40 and bends downwardly in an intermediate portion 26 and is then curved rearwardly at the lower end 28 thereof to permit gripping finger 22 to be inserted into rectangular aperture 46 from the front side 41 of display stand 40 without requiring any access to the lock side thereof. Additionally, gripping finger 22 is sprung inwardly toward the rear surface 20 of face plate 18 to increase the gripping force upon the stand material.

Detailed Description Text (8):

Display stand 40 comprises at least one sheet 42 of a thin planar material, e.g., corrugated cardboard carton stock, which has been crimped or perforated along a plurality of lines to form a plurality of panels hingably attached to one another which may be folded up to form a rigid, three-dimensional, freely standing, upright, folded-plane structure in a fashion which is known in the art. A typical display stand will include at least one vertical, folded-plane panel 40 having a vertically-planar front face 41 containing a plurality of horizontal, rectangular fixture-mounting apertures 46. It has been found that, particularly within thin sheet materials such as cardboard, corrugated cardboard, foam-core, etc., it is desirable to have a relatively large width-to-height ratio, coupled with a relatively wide face plate 18 and gripping finger 22 on support fixture 12, as this configuration tends to distribute the shear loads in the panel caused by the hanging weight of the displayed product to be distributed over a much wider area, permitting larger loads to be suspended from support fixture 12 without tearing of the panel material. Some prior art support fixtures are deficient in this regard, particularly those which embody a very narrow fixture mounting end, coupled with a vertically-oriented rectangular mounting aperture i.e., one whose longest dimension is oriented vertically, or those support fixtures having a pair of cylindrical wire gripping fingers.

Detailed Description Text (9):

In the exemplary embodiment illustrated in the figures, support stand 40 is formed from conventional corrugated cardboard stock. Since, in use, a majority of the loads acting upon support stand 40 will be applied by downward-acting product loads, the corrugations are oriented vertically to provide maximum stiffness in the vertical direction, as illustrated. However, skilled practitioners will recognize that the display system 10 illustrated also lends itself well to fabrication from other materials, such as plain cardboard, bi-directional cardboard carton stock, or even foam-core. Applicant has had good experience with display stands fabricated from these and other materials. Those skilled in the art will recognize that these materials are well adapted to be die-stamped from flat stock and imprinted with a manufacturer's advertising message by conventional color-ink or lithography techniques.

Detailed Description Text (10):

In its intended, typical use, display system 10 is supplied to the manufacturer in a flat, disassembled configuration. Display system 10 will typically comprise a plurality of support fixtures 14, and a plurality of display stand panels 40, which

may include a foldup base, a vertical display panel containing a plurality of rectangular mounting apertures, and one or more "sign board" panels, i.e., attention-getting panels which are assembled to the base and/or vertical panel and direct the consumer's attention to the product being displayed.

Detailed Description Text (11):

The manufacturer will then partially assemble the display system 10 by inserting gripping finger 22 into aperture 46 until support fixture 12 snaps into place against front face 41 of display stand 40, typically when it is in a horizontal position on a packing table (see FIGS. 4, 5 and 6). A product 50 which is to be displayed is then installed on each of the support fixtures 12, typically by means of an aperture 51 contained in the product or its package through which the support member 14 of support fixture 12 is inserted to arrange the products 50 in a stacked, tandem fashion on each support fixture 12. An "egg-crate" packing material 52 is then placed over the partially-assembled display stand 40 to isolate the products from one another and to protect them during shipping, and the pre-packed, partially-assembled display system 10 is then packed within a conventional shipping container 54 for shipment to the retail merchant. Upon receipt, the merchant simply removes pre-packed display system 10 from its shipping container 54, assembles the various portions of display stand 40 and removes egg-crate packing material 52 to prepare display system 10 for presentation to the customer. No additional stocking, shelving, etc. are required.

Detailed Description Text (12):

In the upright position, support fixtures 12 are cantilevered outwardly and slightly upward from the front surface 41 of display stand 40 such that the pre-packed product 50 are suspended in an aligned, stacked fashion, the outermost product being easily seen and accessed by a purchaser on a last-in-first-out basis (see FIG. 6). In the event the retail merchant or a purchaser inadvertently applies an upward-activing force to support fixture 14 during installing or removal of a display product 50, support fixture 12 will not easily be dislodged from support stand 40.

Detailed Description Text (13):

By now, skilled practitioners will recognize that the particular configurations, materials, and methods of manufacture illustrated and discussed herein are exemplary in nature and a wide variety of display systems may be obtained by various modifications thereof, depending upon the particular application at hand. Accordingly, the scope and spirit of the instant invention should be limited only by the claims appended hereto.

CLAIMS:

1. A support fixture for use in combination with a pre-packed product display system of the type having a folded-plane support stand containing at least one horizontal, rectangular aperture therethrough for mounting said support fixture therein, comprising:

a faceplate having a substantially planar rear surface for imparting turning moments to the front surface of said support stand in a region about said aperture;

an L-shaped, substantially planar gripping finger having a cross section slightly less than that of said rectangular aperture such that said finger is substantially coextensive with said aperture to prevent movement of said finger within said aperture by forces acting on said faceplate in a direction parallel thereto, said finger being attached to said faceplate rear surface at a position sufficiently below the upper edge of said faceplate such that a portion of said faceplate rear surface extends above said gripping finger and in contact with said support stand front surface immediately above said aperture when said fixture is mounted therein

for resisting moments acting upwardly on said faceplate, said gripping finger extending rearwardly from said faceplate rear surface through said aperture for a distance slightly greater than said support stand material thickness and downwardly for a length sufficient to grip said support stand material firmly between said finger and said faceplate rear surface and mount said faceplate to said support stand without additional fastening means, said gripping finger being curved rearwardly at the lower end thereof to permit insertion thereof through said aperture from the front surface of said stand without requiring access to the back side of said stand and being sprung inwardly toward said faceplate to increase the gripping force upon said stand material; and

an elongated support member cantilevered outwardly from the front of said faceplate for supporting said product therefrom, said support member being angled slightly upward from the horizontal and terminated in an upturned portion at its outer end.

6. A foldup, pre-packable product display system, comprising:

a support stand made of at least one sheet of flat, thin, planar material foldable along a plurality of lines in said sheet and assembleable to form a rigid, threedimensional, freely-standing, upright, folded-plane structure capable of withstanding the combined weight of said product to be displayed, said support stand having at least one generally vertical, planar, forward-facing side, said vertical side having at least one horizontal, rectangular mounting aperture therethrough; and

an elongated product support fixture having one end cantilevered outwardly from said stand at a slight inclination to the horizontal when said stand is in said upright position for suspending said product therefrom in a displayed position, said support fixture having a second, mounting end adapted for insertion into said mounting aperture from said forward-facing side of said support stand without requiring access to the back side of said stand, said mounting end having means located thereat for gripping said support stand sheet material through said rectangular aperture and for coupling loads applied to said fixture from any direction to said support stand such that said fixture is resistant to withdrawal from said aperture regardless of the attitude of said support stand, whereby said product may be prepacked onto said partially-assembled fixture and support stand and said pre-packed stand may be packaged for transporting before said stand is assembled upright for display.

7. The product display system of claim 6, wherein said support stand sheet material further comprises cardboard.

8. The product display system of claim 7, wherein said support stand sheet material further comprises corrugated cardboard carton stock.

9. The product display system of claim 8, wherein said product support fixture further comprises:

a faceplate having a substantially planar rear surface for imparting turning moments to the front surface of said support stand in a region about said aperture;

an L-shaped, substantially planar gripping finger having a cross section slightly less than that of said rectangular aperture attached to said faceplate rear surface at a position sufficiently below the upper edge of said faceplate such that a portion of said faceplate rear surface extends above said gripping finger and in contact with said support stand front surface immediately above said aperture when said fixture is mounted therein for resisting moments acting upwardly on said faceplate, said gripping finger extending rearwardly from said faceplate rear surface through said aperture for a distance slightly greater than said support



stand material thickness and downwardly for a length sufficient to grip said support stand material firmly between said finger and said faceplate rear surface, said gripping finger being curved rearwardly at the lower end thereof to permit insertion thereof through said aperture from the front surface of said stand without requiring access to the back side of said stand and being sprung inwardly toward said faceplate to increase the gripping force upon said stand material; and

an elongated support member cantilevered outwardly from the front of said faceplate for supporting said product therefrom, said support member being angled slightly upward from the horizontal and terminated in an upturned portion at its outer end.

10. The product display system of claim 9, further comprising:

a support gusset extending between the front of said faceplate to the underside of said support member for strengthening said support member against loads acting downwardly thereon.

11. The product display system of claim 10, further comprising:

a reinforcing rib on the underside of said support member, extending the length of said member from said base plate to said upturned portion.

12. The product display system of claims 9, 10 or 11, wherein said faceplate, gripping finger and support member are formed of a single piece of material.

13. The product display system of claim 12, wherein said faceplate, gripping finger and support member are molded from a single piece of plastic material.

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L9: Entry 1 of 5

File: USPT

Apr 9, 1996

US-PAT-NO: 5505314

DOCUMENT-IDENTIFIER: US 5505314 A

TITLE: Display rack

DATE-ISSUED: April 9, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Brien; Paul	Seal Beach	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
O.B.I. Industries	Cypress	CA			02

APPL-NO: 08/ 441091   [PALM]

DATE FILED: May 15, 1995

PARENT-CASE:

This is a divisional Ser. No. 08/104,189 filed on Aug. 09, 1993 now U.S. Pat. No. 5,464,103.

INT-CL: [06] B42 F 13/00

US-CL-ISSUED: 211/59.1; 248/220.31, 248/231.81

US-CL-CURRENT: 211/59.1; 248/220.31, 248/231.81

FIELD-OF-SEARCH: 211/133, 211/193, 211/88, 211/90, 211/57.1, 211/59.1, 211/86, 211/87, 211/126, 211/94, 248/220.3, 248/220.2, 248/231.8, 248/301, 248/303, 248/304, 108/107, 108/108, 108/109

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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<input type="checkbox"/>	<u>3844231</u>	October 1974	Peacock	211/87
<input type="checkbox"/>	<u>4494661</u>	January 1985	Krusche	211/87
<input type="checkbox"/>	<u>4671417</u>	June 1987	O'Brien	211/59.1

ART-UNIT: 355

PRIMARY-EXAMINER: Ramirez; Ramon O.

ASSISTANT-EXAMINER: Chan; Korie H.

ATTY-AGENT-FIRM: Poms, Smith, Lande & Rose

ABSTRACT:

A display rack having interconnecting sides, back and bottom. The back has a plurality of spaced slots in vertically and horizontally aligned rows. Trays are provided which connect to the back and the side walls. The same slots can be used to hold the trays in position or support fixtures having products suspended therefrom.

2 Claims, 20 Drawing figures

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L9: Entry 2 of 5

File: USPT

Apr 2, 1996

US-PAT-NO: 5503277

DOCUMENT-IDENTIFIER: US 5503277 A

TITLE: Display hook and combination

DATE-ISSUED: April 2, 1996

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Brien; Paul	Seal Beach	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Side-Kik Corporation	Cypress	CA			02

APPL-NO: 08/ 263753   [PALM]

DATE FILED: June 22, 1994

PARENT-CASE:

RELATIONSHIP OF CO-PENDING APPLICATION This application is a continuation-in-part of application Ser. No. 08/104,189, filed Aug. 9, 1993, commonly assigned.

INT-CL: [06] A47 H 1/00

US-CL-ISSUED: 211/94; 211/59.1, 211/87, 248/304, 248/222.51

US-CL-CURRENT: 211/106.01; 211/59.1, 248/222.51, 248/304

FIELD-OF-SEARCH: 211/133, 211/153, 211/184, 211/187, 211/190, 211/86, 211/87, 211/88, 211/90, 211/126, 211/94, 211/59.1, 211/57.1, 248/220.3, 248/220.2, 248/221.2, 248/221.3, 248/231.8, 248/301, 248/304, 108/107, 108/108, 108/109

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>2794555</u>	June 1957	Schild	211/135
<input type="checkbox"/>	<u>2845188</u>	July 1958	Rosenquist et al.	211/184
<input type="checkbox"/>	<u>2915193</u>	December 1959	Bromberg	211/135
<input type="checkbox"/>	<u>2936904</u>	May 1960	Streater	211/147
<input type="checkbox"/>	<u>3120200</u>	February 1964	Travis	108/107

<input type="checkbox"/>	<u>3209919</u>	October 1965	Hoogstoel	211/90
<input type="checkbox"/>	<u>3341026</u>	September 1967	Spitler	211/88
<input type="checkbox"/>	<u>3367291</u>	February 1968	Evans	108/64
<input type="checkbox"/>	<u>3844231</u>	October 1974	Peacock	108/107
<input type="checkbox"/>	<u>3954243</u>	May 1976	Sharp et al.	248/235
<input type="checkbox"/>	<u>4103854</u>	August 1978	Pliml et al.	248/235
<input type="checkbox"/>	<u>4494661</u>	January 1985	Krusche	211/87
<input type="checkbox"/>	<u>4582284</u>	April 1986	Veenstra	248/220.2
<input type="checkbox"/>	<u>4671417</u>	June 1987	O'Brien	211/59.1
<input type="checkbox"/>	<u>4860905</u>	August 1989	Schott et al.	248/220.3 X
<input type="checkbox"/>	<u>5012997</u>	May 1991	Hutchison	211/59.1 X
<input type="checkbox"/>	<u>5022537</u>	June 1991	Henriquez	211/88
<input type="checkbox"/>	<u>5101988</u>	April 1992	Meyer	211/88
<input type="checkbox"/>	<u>5109993</u>	May 1992	Hutchison	211/59.1 X
<input type="checkbox"/>	<u>5165640</u>	November 1992	Williams, III	248/221.2
<input type="checkbox"/>	<u>5235766</u>	August 1993	Fast et al.	211/59.1 X
<input type="checkbox"/>	<u>5379976</u>	January 1995	Degiolamo	248/221.2

ART-UNIT: 355

PRIMARY-EXAMINER: Chin-Shue; Alvin C.

ASSISTANT-EXAMINER: Chan; Korie H.

ATTY-AGENT-FIRM: Poms, Smith, Lande & Rose

#### ABSTRACT:

A display hook and rack combination. The rack has a plurality of spaced openings into which the support fingers of a hook may be inserted. The rack has spaced protrusions thereon associated with the spaced openings and engaging the face plate of the hook providing support and stabilization to the hook so that it cannot be easily dislodged when a product, suspended on the hook, is removed therefrom.

13 Claims, 6 Drawing figures

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L9: Entry 3 of 5

File: USPT

Nov 7, 1995

US-PAT-NO: 5464103

DOCUMENT-IDENTIFIER: US 5464103 A

TITLE: Display rack

DATE-ISSUED: November 7, 1995

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Brien; Paul	Seal Beach	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Side-Kik Corporation	Cypress	CA			02

APPL-NO: 08/ 104189   [PALM]

DATE FILED: August 9, 1993

INT-CL: [06] A47 F 3/14

US-CL-ISSUED: 211/133; 211/88, 211/126

US-CL-CURRENT: 211/133.3; 211/88.01

FIELD-OF-SEARCH: 211/133, 211/187, 211/153, 211/190, 211/184, 211/90, 211/88, 211/86, 211/87, 211/126, 108/107, 108/108, 108/109

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>Re29977</u>	May 1979	Lundqvist	108/108
<input type="checkbox"/>	<u>2213115</u>	August 1940	Bales	108/109
<input type="checkbox"/>	<u>2794555</u>	June 1957	Schild	211/135
<input type="checkbox"/>	<u>2796158</u>	June 1957	Miles et al.	211/187 X
<input type="checkbox"/>	<u>2839350</u>	June 1958	Hill et al.	211/153 X
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<input type="checkbox"/>	<u>2915193</u>	December 1959	Bromberg	211/135
<input type="checkbox"/>	<u>2936904</u>	May 1960	Streater	211/147

<input type="checkbox"/>	<u>3052363</u>	September 1962	Footte, Jr. et al.	108/109
<input type="checkbox"/>	<u>3100460</u>	August 1963	McElroy	108/109
<input type="checkbox"/>	<u>3120200</u>	February 1964	Travis	108/107
<input type="checkbox"/>	<u>3209919</u>	October 1965	Hoogstoel	211/90
<input type="checkbox"/>	<u>3341026</u>	September 1967	Spitler	211/88
<input type="checkbox"/>	<u>3367291</u>	February 1968	Evans	108/64
<input type="checkbox"/>	<u>3481485</u>	December 1969	Hess	108/109 X
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<input type="checkbox"/>	<u>3999775</u>	December 1976	Brongo	211/187 X
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<input type="checkbox"/>	<u>4494661</u>	January 1985	Krusche	211/87
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<input type="checkbox"/>	<u>4671417</u>	June 1987	O'Brien	211/59.1
<input type="checkbox"/>	<u>4791898</u>	September 1988	Howard et al.	211/133 X
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#### FOREIGN PATENT DOCUMENTS

FOREIGN-PAT-NO.	PUBN-DATE	COUNTRY.	US-CL
250143	April 1964	AU	211/187

ART-UNIT: 355

PRIMARY-EXAMINER: Ramirez; Ramon O.

ASSISTANT-EXAMINER: Chan; Korie H.

ATTY-AGENT-FIRM: Poms, Smith, Lande & Rose

#### ABSTRACT:

A display rack having interconnecting sides, back and bottom. The back has a plurality of spaced slots in vertically and horizontally aligned rows. Trays are provided which connect to the back and the side walls. The same slots can be used to hold the trays in position or support fixtures having products suspended therefrom.

28 Claims, 20 Drawing figures

First Hit   Fwd Refs



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L9: Entry 4 of 5

File: USPT

May 16, 1989

US-PAT-NO: 4830318

DOCUMENT-IDENTIFIER: US 4830318 A

TITLE: Display stand

DATE-ISSUED: May 16, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Brien; Paul	Anaheim	CA		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
O.B.I. Inc.	Anaheim	CA			02

APPL-NO: 07/ 210974   [PALM]

DATE FILED: June 24, 1988

INT-CL: [04] F16M 11/32

US-CL-ISSUED: 248/165; 40/606

US-CL-CURRENT: 248/165; 40/611.06

FIELD-OF-SEARCH: 248/165, 116/63P, 116/63R, 403/245, 403/246, 403/264, 40/606, 40/610, 40/612, 211/189, 211/204, 211/182, 211/190

PRIOR-ART-DISCLOSED:

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>2454648</u>	November 1948	Green	40/606 X
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<input type="checkbox"/>	<u>4655352</u>	April 1987	Noyes	211/175 X
<input type="checkbox"/>	<u>4657149</u>	April 1987	Masson	211/189 X

ART-UNIT: 355

PRIMARY-EXAMINER: Foss; J. Franklin

ATTY-AGENT-FIRM: Poms, Smith, Lande & Rose

ABSTRACT:

A knockdown display stand for presenting a display board in a generally upright position. The board is retained to the stand but quickly and easily removable therefrom. The stand has a pair of spaced Y-shaped base members, the shorter legs resting on the floor with the longer leg upright. A tube interconnects the two spaced base members and the uprights each have vertical channels for receiving the board therein.

12 Claims, 14 Drawing figures

First Hit   Fwd Refs



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L4: Entry 2 of 13

File: USPT

Mar 7, 2000

US-PAT-NO: 6034687

DOCUMENT-IDENTIFIER: US 6034687 A

TITLE: Graphical interface for a computer hardware resource having a surrealistic image of a real office machine

DATE-ISSUED: March 7, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Taylor; Billy P.	Houston	TX		
Czerwinski; Mary P.	The Woodlands	TX		
Schoggins, III; Willie Lawson	Spring	TX		
Lee; Young Howard	Houston	TX		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Compaq <u>Computer</u> Corporation	Houston	TX			02

APPL-NO: 08/ 450732   [PALM]

DATE FILED: May 26, 1995

PARENT-CASE:

This is a continuation of copending application Ser. No. 08/303,627, filed Sep. 9, 1994.

INT-CL: [07] G06 F 3/14

US-CL-ISSUED: 345/351

US-CL-CURRENT: 345/775

FIELD-OF-SEARCH: 395/700, 395/650, 395/682, 395/680, 395/683, 395/326, 395/330, 395/334, 395/348, 395/349, 395/358, 345/473, 345/349, 345/348, 345/351, 345/335

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>5283856</u>	February 1994	Gross et al.	
<input type="checkbox"/>	<u>5327558</u>	July 1994	Burke et al.	

<input type="checkbox"/>	<u>5347628</u>	September 1994	Brewer et al.	345/351
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Katsuyama et al., "Multimedia [Paper] Services/Human Interfaces and Multimedia Communication Workstation for Broadband ISDN Environments", IEICE Transactions on Communications, vol. E76-B, No.3, Mar. 1993, Tokyo, Japan, pp. 220-228.

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Discovering A New World of Communications, vol. 4, Jun. 14-18, 1992, pp. 1898-1902.

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Kalimantzalis et al., "PC-Phone: Adding special telephone secretary functions to a PC", 6th Meiterranean Electrotechnical Conference Proceedings, vol. 1, May 22-24, 1991, pp. 530-533.

ART-UNIT: 277

PRIMARY-EXAMINER: Heckler; Thomas M.

ATTY-AGENT-FIRM: Conley, Rose & Tayon, P.C. Heim; Michael F. Harris; Jonathan M.

#### ABSTRACT:

A method for controlling flow, through a computer hardware resource, of information to and from computer applications. When a flow of information is initiated from one of the applications, a determination is made whether the resource is being accessed by another one of the applications and, if so, the flow of information from the first application is delayed. If not, then the flow of information is enabled. When a flow of information is initiated toward the applications, a determination is made to which one of the applications the information is flowing, and the flow is directed to that one application. A graphical interface associates, in the mind of

a user, a computer hardware resource with a corresponding real office device, the computer resource enabling the computer to function like the consumer device. The graphical interface includes a surrealistic image having physical features which represent functional components of the resource, the physical features of the image resembling corresponding features of the office device; and an animation routine which causes the image to change when the user selects one of the features of the image, thereby invoking the change occurring in a manner which resembles changes to the office device when the corresponding feature of the office device is invoked.

6 Claims, 73 Drawing figures

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L4: Entry 1 of 13

File: USPT

Jul 18, 2000

US-PAT-NO: ~~6089453~~

DOCUMENT-IDENTIFIER: US 6089453 A

TITLE: Article-information display system using electronically controlled tags

DATE-ISSUED: July 18, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kayser; Kenneth W.	St. Charles	IL		
Frederick; W. Richard	Mundelein	IL		
Swartzel; Stanley J.	Trotwood	OH		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Display Edge Technology, Ltd.	Troy	OH			02

APPL-NO: 09/ 118653   [PALM]

DATE FILED: July 17, 1998

PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATIONS This application claims the benefit of copending Provisional Patent Application Ser. Nos. 60/061,780 filed Oct. 10, 1997 and 60/067,336 filed Dec. 2, 1997.

INT-CL: [07] G06 K 15/00

US-CL-ISSUED: 235/383; 235/378, 235/385, 235/462.46

US-CL-CURRENT: 235/383; 235/378, 235/385, 235/462.46

FIELD-OF-SEARCH: 235/383, 235/375, 235/378, 235/381, 235/385, 235/462.46

PRIOR-ART-DISCLOSED:

U.S. PATENT DOCUMENTS

Search Selected

Search ALL

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	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
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<input type="checkbox"/>	<u>5448226</u>	September 1995	Failing, Jr. et al.	235/383 X
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<input type="checkbox"/> <u>5850187</u>	December 1998	Carrender et al.	340/825.54
<input type="checkbox"/> <u>5984182</u>	November 1999	Murrah et al.	235/383

ART-UNIT: 286

PRIMARY-EXAMINER: Lee; Michael G

ATTY-AGENT-FIRM: Thompson Hine & Flory LLP

ABSTRACT:

A product information display system has electronic display tags for displaying pricing and product information for products in stores or warehouses. The electronic display tags are electromagnetically coupled to a conductor. A control circuit is used to generate an information signal which contains a tag address and related data. A modulator circuit modulates an ac power signal with the information signal and applies it to the conductor for transmission to the display tags. Each of the display tags is equipped with a coil that is electromagnetically coupled to the conductor for picking up the signals carried by the conductor. A demodulator is used to demodulate the signal picked up by the coil to obtain the original information signal. Each of the display tags is provided with a manually operated switch for initializing the tags with initial addresses transmitted by the conductor. A microprocessor in the electronic tag then compares the address contained in subsequent information signals with the address stored in the tag's memory. If the addresses match, the microprocessor further processes the information signal for visual display or verification functions. An electrical power system supplies ac power to the display tags. A main power distribution loop is connected to the power supply and is magnetically coupled to multiple branch power distribution loops which extend along selected groups of display tags for supplying power to those display tags.

9 Claims, 188 Drawing figures



L4: Entry 1 of 13

File: USPT

Jul 18, 2000

DOCUMENT-IDENTIFIER: US 6089453 A

TITLE: Article-information display system using electronically controlled tags

Application Filing Date (1):

19980717

Brief Summary Text (6):

A number of wireless display systems have been proposed which rely on infrared, acoustic, or radio frequency broadcast for transmission of product information to the display tags. These wireless tags require a battery for powering each tag. Adding a battery to the tag increases the cost of each tag and can make the overall system unaffordable for many applications. Moreover, since a single retail establishment often contains as many as 20,000 to 50,000 display tags, replacement of the batteries and reprogramming such a large number of tags is time-consuming and costly. The radiated signals can also be shielded, for example, by steel freezer cases, causing communication "dead spots" in a store. Moreover, disposing of batteries has an adverse environmental impact. If there are just 50,000 installations with 20,000 tags each, that is a billion batteries that have to be disposed of on a routine basis, and the labor involved in replacing the batteries and reprogramming at each battery change is costly as well. Effective use of such systems requires a battery management system so that the batteries can be replaced before failure, or before the quality of the tag's display diminishes to an unacceptable level. Further, because the tags in a wireless system generally do not communicate problems to the computer, the tags have to be visually monitored to identify problems such as bad or faint tags.

Drawing Description Text (25):

FIG. 18a is a front elevation of a display tag arrangement for display racks of the type used to display products in blister packs;

Detailed Description Text (14):

FIG. 1 also illustrates a communication link 32 between the system controller 28 and an in-store computer 40 (see FIG. 2). This link 32 is also used by the system controller to receive update price information from the store computer 40 (FIG. 2). The same computer supplies data to both the tags and the scanners so that a new price for a particular product is updated in the display tag 20 at the same time the price is

Detailed Description Text (22):

The system of FIG. 2 also includes an in-store computer 40 which communicates with a remotely located central office 42 using a modem or other type of communication link and with in-store check-out scanners 44. The in-store computer 40 provides a database of information, received from the central office 42 (or from a scanner controller), for all the merchandise in the store. The database is used to link each product with a physical-location address, an alpha-numeric (or UPC) description, a price, and a unit cost and general inventory information. The database may be accessed for the check-out scanners 44 as well as the system controller 28. Changes in the database of the in-store computer 40 are generally initiated by updates received from the central office, but database changes producing display changes can also be made directly at the in-store computer 40.

Detailed Description Text (23):

After receiving the product data from the in-store computer 40, the system controller 28 selects the desired display information and associated display tag address, and converts this display information into a data stream for transmission to the appropriate area controller 31. The area controller 31 then forwards this information to its associated one of the wire loops C.sub.1 -C.sub.n i.e., the wire loop associated with the designated tag 20.

Detailed Description Text (25):

Advantageously, in operation, in the system described above, the system controller can perform additional functions. For example, when actual price changes or other data are not being sent to the tags 20, the system controller can poll the tags to check on the integrity and correctness of the price and other information stored in the individual tags. As it will be described more fully herein below, each of the tags 20 is provided with suitable memory capacity for retaining the necessary product and pricing information. Importantly, although the system controller is polling the individual tags to check this information, it can also poll the in-store computer 40 to compare the information on the tags with the pricing information for the corresponding items which has been sent by the in-store computer to respective point of sale (POS) or checkout scanners 44, for example at checkout counters or the like. Thus, the system controller when not engaged in other tasks preferably compares the data in the tags with the data being sent to the point of sale scanners to ensure that the two coincide, and to audit and update the information to the tags or to report any discrepancy in the event different information has been conveyed to the point of sale scanners. The system controller also performs CRCs on the data in the tags.

Detailed Description Text (26):

To facilitate installation of tags 20, an RF transceiver 49 coupled with the system controller may communicate with a portable scanner or terminal/printer with RF transceiver 51, such as a Telxon PTC 960, carried by a worker in an aisle or other storage/display area. However, the RF transceiver 49 may already be provided with the in-store computer 56, as indicated by the dashed line, in which case, a separate RF transceiver need not be provided for the system controller 31. The installation and initialization of a tag 20 using these elements is further described below with reference to FIG. 28.

Detailed Description Text (30):

Referring to FIG. 4, an elevation of the system of the invention as typically installed in a store or other building is shown in somewhat diagrammatic form. As indicated in the elevation, the wires or cables 27 from the system controller (TSC) 28 (located in a computer room or the like which is separated from the storage or display area) may run above a drop ceiling CLG of the building, that is, below the building roof B RF but otherwise above the storage or display area of the building. The wiring from the system controller 28 (SC) to the area controllers 31 (TAC) is in a daisy chain configuration. Thus, a first segment 27a of the cable 27 runs to a first area controller 31a while a last segment 27n runs from the last area controller (not shown in FIG. 4) back to the system controller 28. As mentioned above, the use of an SELV compliant system means that the cables 27 may be ordinary telephone type cables or wiring. Consequently, a simplified type of construction can be facilitated wherein telephone connectors such as RJ 11 jacks and plugs as indicated at 29 can be used to interconnect the wire segments 27 to the respective area controllers 31. Thus, the first area controller 31a receives the wire 27a at an RJ 11 connector 29a while a second RJ 11 connector 29b connects to a succeeding wire segment 27b which runs to another area controller (e.g. in another aisle), etc. More than one area controller may be used along an aisle, if necessitated by the length of the aisle and the number of tags 20 to be serviced, i.e. dividing the aisle up into various sections or segments of stringer, riser, loops and shelf tags, each section or segment being serviced by an area controller.



Detailed Description Text (31):

The area controllers 31 are preferably mounted at the top portions of respective sections of shelving or gondolas as previously indicated and described above with respect to FIG. 1. The TAC 31 may be mounted near the end of a gondola or aisle as shown in FIG. 4, or nearer the middle. This choice will determine the relative length of each section of stringer 422 (described below). The shelves and gondolas have not been shown in FIG. 4 in order to more clearly show the elements of the system of the invention. The area controllers are coupled to stringer cables or wires 422 which will be more fully described later and which generally run vertically and preferably along the top portion of each section of shelving or each gondola. As also described more fully herein below, in order to minimize inductance and signal losses, the areas within loops formed by the stringers and risers, as well as the shelf loops are kept as small as possible, consistent with the length of each loop necessary to reach its subsequent connections in the system and the need to transfer power between loops and from shelf loops to tags. Thus, for example the respective pairs or wires which form the stringers 422 and risers 423 are run close together, and the wires in the shelf/rail loops 4300 one separated by no more than the height of the pickup coil (described later) in the tag 20 to which they are inductively coupled.

Detailed Description Text (33):

In order to simplify installation and control costs, an 8-conductor telephone wire or cable may be used as cable 27, with at least two conductors for carrying the RS 485 data from the system controller 28 to the area controller 31, as well as conductors carrying positive and negative dc voltage supplies for the area controllers 31 and suitable dc voltage returns. However, protocols other than RS 485 and conductors other than telephone cable may be used without departing from the invention. Inexpensive off-the-shelf parts can be used to reduce cost.

Detailed Description Text (35):

As mentioned above, the system controller provides each tag with the information to be displayed. Referring now to FIG. 5, the system controller 28 is implemented using personal computer hardware 28, (such as a 486 system or equivalent). The system controller is accessed through the in-store computer 40, if desired, and therefore need not have its own CRT, keyboard and/or mouse. The system controller 31 also contains a number of network boards configured for serial two-way communication with the area controllers 31. Alternatively, communication can be accomplished with conventional RS422/RS485 interfaces or equivalent. The system controller 28 also contains a conventional hard-drive 62 for programs, protocols, addresses and storage, and power and data distribution circuits (such as LAN cards for RS485 communications) 64a, 64b, etc. for all the area controllers 31 in the system. Each distribution circuit 64 transmits and receives serial data over one set of lines 68 and sends dc power over another set of lines 70. A rechargeable 48-volt dc battery 72 is used as the power source for the area controllers 31, with an ac-powered battery charge/discharge/disconnect circuit 74 activated as necessary to maintain an adequate charge on the battery 72. The battery 72 is the primary power source for the area controllers 31, and emergency power for the system is also provided from this battery.

Detailed Description Text (36):

As discussed above, the system controller 28 is primarily responsible for receiving pricing information (as well as other product information) from the store computer 40 and for causing the information to be displayed by the proper display tag 20. The system controller 28 is also configured to perform several other high-level functions. The system controller maintains the integrity of all product and display tag information by performing data validation checks. Many of these validation checks are performed automatically in the background. For example, the system controller regularly initiates background audits for validating the data contained on each of the display tags 20, and also regularly audits the display tag data

against point of sale ("POS") information. Preferably, the background audits are performed whenever the system controller is not otherwise involved in a task, such as display tag initialization.

Detailed Description Text (37):

The system controller 28 facilitates at least two types of graphical user interfaces ("GUI"): a user console/terminal GUI and a portable RF terminal GUI. The user console/terminal GUI may operate on the store computer 40 or may operate on a separate computer terminal coupled directly to the system controller 28. The portable RF terminal GUI operates through the RF transceiver 49 for controlling the operation of the individual portable (hand-held) RF terminal units 51. As will be discussed in detail below, the portable RF terminal units 51 allow for store personnel to install new display tags, to verify display tag data, and to find lost or misplaced display tags.

Detailed Description Text (41):

The system controller software program includes a store controller console GUI controller module 508, a point of sale data manager module 510, a portable RF terminal GUI controller module 512, an RF base station controller module 514, an RS/485 communication manager module 516 and an activity log manager module 518. The store controller console GUI controller module 508 generally provides the graphical user interface for the store controller console 520 or for the console coupled to the in-store computer 40. The portable RF terminal GUI controller module 512, likewise, provides the graphical user interface for the (hand-held) portable RF terminal units 51. The store controller console 520 and the portable RF units are primarily used by store personnel for installation, maintenance, service and monitoring/diagnostics. The installation procedures and some diagnostic procedures will be described in greater detail below. Significant events occurring in the store controller console GUI controller module 512, the RF base station controller module 514 and the portable RF terminal GUI controller module 512 are sent to the activity log manager module 518 for recordation.

Detailed Description Text (47):

FIG. 10b illustrates an alternate embodiment of an area controller in which adjacent shelves include separate shelf and rail distribution loops 4300. Each shelf and rail distribution loop 4300 communicates with a plurality of shelf tags 20. The area controller 31 shelf communicates with the rail distribution loops via a stringer 422 and a riser 423. As with the embodiment illustrated in FIG. 10a, adjacent shelf and rail distribution loops 4300 may be configured so that the current  $n$  adjacent conductors of nearby shelf loops flows in the same direction in order to reduce radiation emission problems. A more complete description of the shelf and rail distribution loop 4300, the stringer 422, and riser 423 is given elsewhere herein with reference to FIGS. 3 and 37-44. Also, magnetic coupling may be used throughout the system, for example, in connection with the stringers.

Detailed Description Text (128):

FIG. 6 shows a portion of system controller 28 having a plurality of the power and data distribution circuits 64 mentioned above with reference to FIG. 3. As shown, the top and bottom power and data distribution cards 64a and 64f may each be connected to a network interface circuit 80a and 80b, respectively. Power and data distribution circuit 64a receives serial data from a network interface circuit 80a (send card) which may be a RS485 transceiver circuit. The network interface circuit 80a receives the data signal from the computer (PC) of the system controller 28. Power and data distribution card 64f transmits serial data to a network interface circuit 80b (receive card), which provides the data to the PC of the system controller 28. All of the power and data distribution cards 64, the network interface circuits 80a and 80b, and the connected area controllers 31 are connected in a daisy chain fashion to provide a wired loop, such that two-way serial communication may occur between the system controller 28 and individual area controllers 31.

Detailed Description Text (147):

FIGS. 31b and 31c show enlarged front and rear views of the display tag of FIG. 31a, with portions cut away to reveal internal structure. As best shown in FIG. 31b, the display tag 20 consists of a three-piece housing 311, including a bobbin 3106 and two endcaps 3108a, 3108b molded from a synthetic polymer, for accommodating a pick-up coil 110 (FIG. 15a), a display 3102, a circuit 3110 and switchplate (not shown), covered by protective overlay 3100. The bobbin 3106 includes an outer channel 328 formed entirely around its periphery for receiving the pick-up coil 110. The outer channel 328 in one embodiment has a depth and width of about 0.1 inches, with pick-up coil 110 (not visible in FIGS. 31a and 31b) constructed of 64 turns of #32 gauge insulated copper magnet (double bond) wire. It will be appreciated, however, that the configuration of outer channel 328 and composition of pick-up coil 110 may be varied to suit the needs of the user. For example, pick-up coil 110 may be constructed with different gauge or composition of wire, with fewer or greater turns according to the level of skill in the art.

Detailed Description Text (151):

Similar to the embodiment of FIG. 31a, the opaque portion of protective overlay 3100 in FIG. 31d may be imprinted with textual and graphic information to supplement the information provided on display 3102, and may be printed in any of several colors. For example, in the illustrated embodiment, the term "UNIT PRICE" is printed on the portion of overlay 3100 overlying left section 3102l of display 3102 and the term "RETAIL PRICE" is printed on the portion of overlay 3100 overlying right section 3102r of display 3102. Paper labels, "flickering" displays or other suitable means may also be utilized to convey desired product codes and/or information. The color of protective overlay may be selected from among a variety of available colors or combination of colors. In one embodiment, for example, protective overlay 3100 is printed in two colors, with one side of protective overlay 3100 being blue and the other side of protective overlay 3100 being orange. It will be appreciated, however, that other colors or combinations thereof may be selected as needed or desired by the user.

Detailed Description Text (169):

base component 3600 and front cover 3630 are formed using conventional thermoforming techniques, from a continuous sheet of polyvinyl chloride (PVC) rollstock material heated and drawn into appropriately shaped mold cavities so as to form a "web" of multiple components. Window frame 3620 may similarly be formed using conventional thermoforming techniques. It will be appreciated that operations involving these or any other thermoformed components may be accomplished on multiple components in the web or on individual components detached from the web. It will further be appreciated that other rollstock materials known in the art, such as oriented polystyrene (OPS), polypropylene and the like, may be utilized to form the base component 3600 and front cover 3630.

Detailed Description Text (178):

FIG. 18a illustrates a display tag arrangement for products which are displayed on racks rather than shelves. This type of display rack is commonly used for products which are packaged in blister packages. The rack includes multiple rods 330, each of which supports multiple packages. A package can be removed from the rod by simply sliding the package off the forward end of the rod.

Detailed Description Text (322):

As shown in FIG. 28, the portable scanner or terminal 51 (also shown in FIG. 2) is utilized in this procedure. Initially, the installer logs onto the portable terminal 51 and selects a tag installation/programming mode. Next, the installer selects the identification number for the area controller 31 for the aisle or area he or she is working in. Preferably, upon installation of the system, the store computer 40 or system controller 28 will include a look-up table that corresponds each of the area controllers 31 to a text string describing the area of the store

for which the area controller is positioned. For example, a text string such as "Aisle Three, South Side" may be used to describe the location of an area controller. Therefore, rather than requiring the installer to enter in an identification number for a particular area controller as described above, the installer will be able to select an area controller by scrolling through a menu listing the areas of the store corresponding to the area controllers.

Detailed Description Text (324):

Next, the operator utilizes the handheld wand or sensor 3002 to scan the UPC portion 3010 of a product package 3012 in association with which the tag 20 is to be used. This information is sent to the system controller 28 via RF transceiver 3005 portion of the terminal 51 and RF transceiver 49 coupled to the system controller 28. The system controller in response to this information from the product package 3012 then searches for the pricing and other appropriate information for display by the tag. This pricing and other information is then sent to the tag, by way of the area controller 31 in accordance with the communication scheme described elsewhere herein. The user or installer then observes the product information displayed on the tag and on the display portion of the display/printer 3008 of the portable terminal and compares these two displays to the scanned item. At this point the installer is also able to select the type of product information displayed by the tag, such as cost per unit, cost per ounce, etc. Once all of these elements of information are configured and verified, the operator again presses the tag push-button 3150 to confirm and lock in the tag data from the system controller, effectively linking the display tag to the particular product.

Detailed Description Text (329):

Referring now to FIGS. 27a-27b, a flow chart shows how, in an alternate embodiment, the display tag is programmed to initialize the tag with an address and to bring the tag "on-line". This programming mode starts at block 230 and proceeds to block 232 where the microprocessor in the tag performs a power-on self-test (block 232) involving memory and register checks. At block 236, a test is performed to determine if the self-test passed. If not, flow proceeds from block 236 to 234 where the tag reports the error to the system controller. If the self-test passes, flow proceeds from block 236 to block 238, 240 and 242 where UART is initialized and the tag's clock is adjusted and phase-synchronized to the frequency (50 kHz) sensed on the power signal carried by the conductor. From block 242, flow proceeds to block 244 where the tag temporarily assigns itself tag "00," so that it can receive the "Load All" command from the area controller for address initialization.

Detailed Description Text (332):

At block 256, the tag address received within the packet is adopted by the tag. From block 256, flow proceeds to block 258 where the tag goes on-line by sending an "Ack" communication to the area controller. At block 260, the tag is depicted as going on-line. This ends the program mode for initializing the tag.

Detailed Description Text (338):

The cursor mode begins at blocks 290, 292 and 294, where the tag sets up the display with a cursor position movable by one of the buttons, the scroll button. At blocks 296 and 298, the tag performs a test to determine whether a scroll button has been depressed. If so, flow proceeds to block 302 where the tag changes (or scrolls through) to the next cursor code position. From block 302, flow returns to blocks 296 and 298 where the tag performs yet another test to determine if the scroll button has been depressed. This continues with the display code position being changed with each depression of the scroll button (switch). When the other switch (the "select button") is depressed, the current cursor position is equated with a package (or function), as indicated at block 306. The current position of the cursor is returned to the area controller thereby selecting the associated data block. The area controller may optionally await a verification to be entered into the buttons on this tag before acting on selected data.

Detailed Description Text (344):

Additional Operation Modes Additional modes of operation for the system (in addition to the tag installation mode and the tag verification mode) include: product order mode, where the store personnel will be able to reorder products using the portable RF terminal 51 by scanning the product or by depressing a push button of a tag associated with the product, and then by using the user interface of the portable RF terminal to instruct the store computer 40 how much of the product to order; a facing mode, where the store personnel will be able to scan a product or depress a push button of a tag associated with the product, and the display portion 3008 of the portable RF terminal 51 will display the facing arrangements for that product; a restock mode, where store personnel will be able to scan a product or depress a push button of a tag associated with the product, and the tag will then blink its display on and off so as to alert the stock boy to restock that item, and once restocked, the stock boy may again depress the push button of the associated tag so that it stops blinking.

Detailed Description Text (372):

Returning now to FIG. 42a, bobbins 4262, 4264 and 4266 are stacked together and inserted within an "E" shaped portion 482' of a two-piece high-perm magnetic core, e.g., a 5000 perm ferrite core. A second, flat piece (not shown in FIG. 42a) of the magnetic core is then positioned above the "E" shaped portion 482', in generally the same manner described in relation to FIGS. 44a and 44b. "E" shaped portion 482' includes a middle arm 483' and two outer arms 482', 484'. Bobbins 4262, 4264 and 4266 are stacked together, in any order, and inserted within the "E" shaped portion 482' such that they fit around the middle arm 483' and between the two outer

Detailed Description Text (398):

The "plug" method of the second embodiment is now described. Referring now to FIG. 39c, a junction box 3950 is attached at the end of an upright 3952. The upright 3952 is a standard upright used in shelving having a hollow interior and containing a series of holes 3953a-f. The junction box 3950 also comprises a pair of arms 3954 having hooks 3956. The arms 3954 extend parallel to and under the top part of a shelving section (not shown). The purpose of the arms 3954 and hooks 3956 is to hold a riser 3958.

Detailed Description Text (416):

One reason complying with SELV standards is difficult is that loads according to the present invention appear to the area controllers to be series loads. Such a configuration is beneficial because this configuration guarantees that the same current flows to all tags and thus, the power/current to all the sections and tags is balanced. Accordingly problems which arise with parallel-arranged configurations are avoided, such as where different parallel loops have different impedance resulting in different amounts of current being driven in each loop. However, because all of the loads in the system according to the present invention are in series and thus add in series, impedance management and reduction is important in order to meet SELV standards.

Detailed Description Text (421):

With respect to the use of a capacitor in a shelf and rail distribution loop (as shown for example at 806 in FIG. 10b), the insertion of the capacitor into the loop provides the benefit of allowing the loop to be driven with a square voltage wave signal that results in a near sinusoidal current. The resulting sinusoidal current improves the functioning of the reverse communication scheme. Additionally, the insertion of the capacitor reduces radiation and eliminates higher order harmonics by shaping the current signal to more closely resemble a sine wave and less like a square wave.

Detailed Description Text (439):

In order to facilitate coupling of the conductors 430 and 431 to the shelf and rail

distribution loops, rectangular holes 435 are formed in the central web of the dielectric strip 432, at regular intervals along the length of the strip. As will be described in detail below, these holes 435 are used to receive a snap-on magnetic core module that couples the riser and shelf distribution loops. The center-to-center spacing of the holes 435 along the length of the strip is preferably the same as that of the shelf-mounting holes 436 in the shelf-support column 437 on the gondola (FIG. 41c), so that a hole 435 will always be located close to the rear edge of a shelf, regardless of where the shelf is mounted on the gondola. The riser 423 may be prefabricated in different lengths to match the dimensions of gondolas of varying heights.

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<u>L3</u>	L2 and (internet or online or web or www or "on-line")	50	<u>L3</u>
<u>L2</u>	L1 and (user with (select\$ or choos\$ or pick\$))	86	<u>L2</u>
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